

REMARKS

The Office Action mailed on August 30, 2004, has been reviewed and the comments of the Patent and Trademark Office have been considered. Prior to this paper, claims 12-28 were pending. By this paper, Applicants do not cancel or add any claims. Therefore, claims 12-28 remain pending.

Applicants respectfully submit that the present application is in condition for allowance for the reasons that follow.

Specification Objections

In the Office Action, the Specification is objected to. Applicants respectfully request reconsideration in view of the above amendments.

Claim Rejections Under 35 U.S.C. §103(a)

In the Office Action, Claims 12-14 and 16-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kobayashi (U.S. Patent No. 4,912,302) in view of Tomantschger (U.S. Patent No. 5,302,274). Further, claims 15 and 24-28 are rejected as obvious in view of the just mentioned combination when further combined with Gadkaree (U.S. Patent No. 6,097,011), with claim 28 also being rejected in view of this combination when further combined with Kawakudo (U.S. Patent No. 4,950,443). Applicants respectfully traverse the rejection as to the claims above and submit that these claims are allowable for at least the following reasons.

Applicants rely on MPEP § 2143, which states that:

[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation,

either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that at least the first and third criteria of MPEP § 2143 have not been met in the Office Action.

The Cited References Do Not Suggest All Claim Recitations

Even if the first requirement of MPEP § 2143 was satisfied in the Office Action (which it is not, as explained below), the cited references still do not meet the third requirement, which is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.”

Claim 12: Claim 12 recites a carbon heating element comprising carbon acting as a good conductor and boron nitride acting as a conductivity-inhibiting material.

In contrast, neither Kobayashi nor Tomantschger disclose or suggest each feature of claim 12, even after combination. The Office Action correctly recognizes that Kobayashi does not teach or suggest each element of claim 12, and thus relies on Tomantschger to satisfy the deficiencies of Kobayashi, alleging that “Tomantschger teaches a conductive metal frame member 20 filled with carbon (col. 12, lines 40-45) and also containing boron nitride (col. 9, lines 57-66).” However, *frame member 20 is not conductive*, as is clearly stated at col. 8, lines 12-14 of Tomantschger: “The electrolyte 24 is retained within the third *non-electrically conductive* frame member 20.” (Emphasis added.) Indeed, if frame member 20 was conductive the gas sensor 10 would not work. In Tomantschger, the electrodes 12 and 16 are bonded to frame members 14 and 18 which are conductive. The electrodes are not bonded to frame 20.

Moreover, Tomantschger does not teach that frame member 20 is filled with carbon. Tomantschger does teach, at the lines cited in the Office Action, that “*conductive frame members* were made from polypropylene filled with carbon.” (Emphasis added.) However,

as just noted above, frame member 20, the member identified as containing boron nitride, is not conductive. Thus, Tomantschger fails to teach that the frame member 20 is filled with carbon.

In sum, because Tomantschger does not remedy the admitted deficiencies of Kobayashi, the third requirement of MPEP § 2143 is not satisfied with respect to claim 12.

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Claim 13: Claim 13 recites that the carbon of the heating element is obtained by firing organic substances. Kobayashi does not teach that the carbon of his heating element is obtained in such a manner. While the passages cited by the examiner (col. 11, lines 58-67) teach that a specimen is exposed to firing using "carbon heaters," this is not the same as obtaining carbon by firing organic substances.

Claim 14: Claim 14 recites a carbon heating element "further comprising carbon powder acting as a good conductor." However, neither reference discloses or suggests such a feature, and the contrary is not alleged in the Office Action.

Claims 17-23: Claims 17-23 recite various specific resistance values of the claimed carbon heating element. The various recited values span about $0.3 \times 10^{-3} \Omega\text{-cm}$ to about $7.5 \times 10^{-3} \Omega\text{-cm}$. The Office Action cites Tomantschger (at column 9, lines 34-56) as teaching a resistance range from 0.1 to 1,000 ohm-cm. This is at least an order of magnitude *greater* than any of the claimed values. Thus, these claims are allowable for at least this additional reason.

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As noted above, claims 15 and 24-28 are rejected as obvious in view of the combination of Kobayashi, Tomantschger and Gadkaree. Claim 15 is not obvious because of the allowability of claim 12 in view of Kobayashi and Tomantschger. Claim 24 is allowable for the pertinent reasons that make claim 12 allowable detailed above, and for the additional reason that Gadkaree does not remedy the deficiencies of Tomantschger. Claim 25 is likewise allowable at least due to its dependency from claim 24.

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In regards to claims 26-28, Applicants respectfully submit that an incorrect standard is being used to reject these claims. The Office Action states that "Kobayashi in view of Tomantschger teaches the structure that *is inherently capable of use* as set forth in claims 26-27 (See MPEP 2131.01)." (Emphasis added.) First, Applicants submit that the MPEP section cited in the Office Action is irrelevant to the position substantiating (allegedly) the rejection of claims 26 and 27 proffered in the Office Action. Second, assuming *arguendo* that the proffered position is correct, Applicants note that claims 26 and 27 are claims directed to the method of making a carbon heating element; the claims are not directed to a method of use. Thus, these claims are allowable for at least this reason in addition to the pertinent reasons detailed above. Claim 28 is allowable at least for the reason that it depends from claim 26, and because Kawakudo is not a reference that may be sufficiently used to remedy the deficiencies of Kobayashi, Tomantschger and Gadkaree.

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In sum, even if the first requirement of MPEP § 2143 is satisfied, the third requirement of MPEP § 2143 is not satisfied in the Office Action, since the cited references do not teach each and every element of the present invention. Thus, the present claims are allowable.

Lack of Suggestion or Motivation to Modify or Combine the References

As noted above, for a claim to be obvious per MPEP § 2143, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In the present instance, there is insufficient suggestion or motivation to combine Kobayashi with Tomantschger. For example, while Kobayashi contains teachings related to heating elements, Tomantschger, teaching a gas sensor cell apparatus, is completely unrelated to such technology. The artisan of ordinary skill would not have been motivated to look at gas sensor cell art to remedy the deficiencies of Kobayashi.

Further, the proffered motivation to modify Kobayashi (that "boron nitride as non-conductive material and resistance range as conventional in the art as taught by Tomantschger") is not sufficient per the requirements of MPEP § 2143.01. First, the fact that Tomantschger teaches technologies outside the heating element art necessarily prevents Tomantschger from being used as evidence of what is "conventional in the art" of heating elements. Second, as noted above, the resistance ranges taught by Tomantschger are at least an order of magnitude above the claimed ranges, and, therefore, Tomantschger does not present evidence of what is "conventional in the art." If anything, it presents evidence that the present invention would not be obvious in view of the allegedly conventional knowledge.

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In summary, because of the lack of suggestion or motivation in the prior art to modify the reference, the first requirement of MPEP § 2143 has not been met and, hence, a *prima facie* case of obviousness has not been established.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Examiner Fastovsky is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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